REMARKS

Reconsideration of this application is respectfully requested.

Independent claims 1, 8, and 9 have been amended by incorporating the limitation that the lubricant (L) comprises, in addition to a lubricant base oil (A) and a sulfur-containing molybdenum complex (B), at least one particular friction modifier (C) and a particular sulfur-free metal detergent (D). The support for this amendment is found in original claims 3 and 11; at page 16, lines 13-17; from page 45, line 27 to page 46, line 5; and in Example 1 at page 60, lines 1-7 of the specification.

Claims 1, 8, and 9 have further been amended by limiting the base oil (X) to have a kinematic viscosity at 100°C of 3.5 to 5 mm^2/s, a total aromatic content of 0 to 2 mass%, and a total sulfur content of no higher than 0.002 mass%. Support for these amendments is found at page 12, lines 10-12 and lines 22-24, and at page 13, lines 8-9 of the specification.

Claims 2, 5 and 10 have been amended to be in conformity with amended claims 1, 8, and 9.

Claims 1-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al., JP Publication No. 2001-316686 in view of Berlowitz et al., US Patent Application Publication No. 2002/0086803. This ground for rejection is respectfully traversed.

In the response dated March 9, 2009, the background and the feature of the present invention were explained. A similar description is also found in paragraphs [0009] and [0010] of Miyake. An English translation of these paragraphs reads as follows:

> "[0009]
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> In general, various extreme pressure additives are added to engine oils or transmission oils for the purpose of improving anti-wear property or friction characteristics. These additives are added for the effect of reducing friction or inhibiting contact between metals to improve anti-wear property, by being adsorbed on the sliding member surface made of metal, especially steel, or by sliding on the sliding member surface to form a reaction product of the additive.

[0010]

However, it has been found that, in a lubricant containing such additives, the surface of conventional sliding members having a hard carbon coating film treated by plasma CVD or the like is stable and hard to adsorb the oil additives or to form a film of a reaction product of the additives, compared to a metal surface without the coating, and thus the performance of the additives cannot fully be exhibited."

In view of such background, it should be noted that even a lubricant containing a friction modifier which exhibits excellent lowering of the frictional coefficients on steel surfaces, does not have a frictional coefficient reducing effect on DLC contact surfaces.

Claims 1, 8, and 9 of the present application have been amended by limiting that the lubricant (L) comprises, as essential components, a lubricant base oil (A) containing a particular base oil (X), a sulfur-containing molybdenum complex (B), a particular friction modifier (C), and a particular sulfur-free metal detergent (D), and that the base oil (X) has the particular, limited kinematic viscosity, total aromatic content, and total sulfur content.

With the lubricant having such a particularly specified composition, the present invention provides excellent friction reducing property in lubricating DLC contact surfaces, and excellent friction reducing property and high temperature detergency in lubricating both DLC contact surfaces and non-DLC contact surfaces together. Such effects should be recognized as effects unexpected to the skilled person in the art, in view of the background problems, and sufficiently supported by the Examples with reference to Comparative Examples of the present application, and particularly shown in Table 1.

It is understood from Examples 1, 2, and 7, which remain within the scope of the amended claims, that the present invention achieves both excellent high temperature detergency and high friction torque reduction rate, compared to Examples 3-6, which are now outside the claimed range. A phosphorus-based anti-wear agent contained in the lubricants of Examples 1 and 2 is not an essential component as is understood from Example 7.

Miyake discloses a lubricant for lubricating sliding surfaces having a DLC film, containing a base oil consisting of a mineral/synthetic oil, 0.01 to 0.2 wt% MoDTC in terms of molybdenum, and ZnDTP.

However, Miyake is silent about the claimed properties of the base oil, i.e., the base oil consists at least one of a hydrocracked mineral oil, a wax-isomerized mineral oil, and a poly-α-olefin base oil, and has a kinematic viscosity of 3.5 to 5 mm^2/s at 100°C, a total aromatic content of 0 to 2 mass%, and a total sulfur content of not higher than 0.002 mass%.

Miyake does not suggest that the lubricant contains the particular friction modifier (C) and the particular sulfur-free metal detergent (D), which are essential components of the present invention.

Berlowitz discloses a lubricant composition for an internal combustion engine comprising an isoparaffinic hydrocarbon base stock such as FT derived base stock which undergoes hydrocracking. The FT derived base oil has a kinematic viscosity of 4.83 cSt at 100°C, a total aromatic content of less than 0.1 wt%, and a total sulfur content of less than 1 ppm. The composition may also contain additives including alkali metal phenate detergents, friction modifiers including glycol esters and ether amines, and anti-wear additives including metal phosphate.

However, Berlowitz is silent about the sulfur-free metal detergent (D) selected from alkali metal or alkaline earth metal salicylates, which is an essential component of the present invention as set forth in claims 1, 8, and 9.

Further, the friction modifiers of Berlowitz are specified as glycol esters and ether amines, which are clearly excluded from the friction modifier (C) in the present invention as set forth in claims 1, 8, and 9.

Since Miyake in view of Berlowitz do not disclose the particular sulfur-free metal detergent (D) of the present invention, and the friction modifier (C) is different from that of Berlowitz, and in

the absence of disclosure of the unexpected effect of the present invention as mentioned above, the present invention is not obvious over these references.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Berlowitz as applied to claims 1-14 and 16-17 above, and further in view of Yagishita, US Patent Publication No. 2005/0272616.

Yagishita discloses a low sulfur lubricant composition for use in an internal combustion engine, wherein the base oil can be derived from hydrocracking and produced by isomerizing GTL wax. The composition further comprises a sulfur-free metal detergent such as neutral alkaline earth metal salicylate, a friction modifier such as aliphatic amines, and a sulfur-free phosphorus anti-wear agent.

However, Yagishita does not teach or even suggest lowering the frictional coefficient of a lubricant composition. Yagishita merely discloses a lubricant composition which has oxidation stability in the presence of water, and only oxidation stability tests were conducted in the Examples.

Further, as discussed above in the background of the present invention, even if the disclosed lubricant composition may impart a low frictional coefficient to steel materials, it does not mean that the lubricant composition could impart a low frictional coefficient to contact surfaces including DLC contact surfaces, as to which it is harder to lower the frictional coefficient. Yagishita is silent about the unexpected effect of the present invention.

It is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to apply the alkaline earth metal salicylate of Yagishita to the teachings of Miyake and Berlowitz, particularly in view of the technical background as discussed above.

Based on the preceding arguments and amendments, it is respectfully submitted that the present invention is not obvious over Miyake in view of Berlowitz and further in view of Yagishita and the present claims are in condition for allowance.

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